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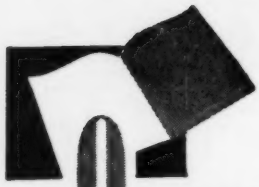

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Mr. Hsieh has a B.A. degree, National Chekiang University, China, and an M.A. degree, Syracuse University. From 1941-1946 he was research assistant in China's Institute of Geography, Peipeh, near Chungking. In 1947 he lectured in geography at the Formosa Teacher's College at Taipeh. Since 1948 he has been working toward his degree at Syracuse University.

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Mrs. Wilson holds the B.S. and M.S. degrees in Education from the New Jersey State Teachers College at Trenton. She has taken courses at the West Chester State Normal School, Pennsylvania State College and the University of Pennsylvania. Her teaching experiences have been departmental work in geography in Grades 5-8 in both Pennsylvania and New Jersey. She is now teaching eighth grade geography.

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Dr. Knobloch is Professor of Biological Science, Michigan State College. Formerly with the United States Department of Interior and manager of the Cia Minera de Barranca de Cobre, he has written one book and numerous articles in the Biological Field.

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Dr. Whitaker, Professor of Geography, George Peabody College for Teachers, is well known for his many books and numerous articles and book reviews which have appeared in many magazines both in the United States and abroad. In 1948 he was awarded the Almon E. Parkins Prize for his article on "International Aspects of Conservation" which appeared in the April, 1944 issue of the JOURNAL OF GEOGRAPHY.

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VOLUME LI FEBRUARY, 1952 NUMBER 2

FORMOSA—A RICH ISLAND OF THE FAR EAST

CHIAO-MIN HSIEH
Syracuse University

Formosa, a contraction of "Ilha Formosa," is Portuguese in origin and means "the beautiful island." In the Far East it is known by the Chinese name "Taiwan" which means "Great Bay."

The island is separated from China by a channel about 100 miles in width. The east coast faces the Pacific Ocean. It is approximately 240 miles long from north to south and 90 miles from west to east at the broadest part, with a smooth coast line of 700 miles. It covers an area of 13,807 square miles, about one-third as large as Virginia. The shape of the island is roughly a long oval, like a sweet potato, stretching from north to south. It lies astride the Tropic of Cancer in a position comparable to that of Cuba (Fig. 1).

Located between the Malayan Archipelago, the mainland of China, and Japan, historically the island has had a checkered existence. The relationship of the island with China dates as far back as 607 A.D. to the Sui Dynasty. Before the 16th century the island was settled by tribes of Malayan or Polynesian origin. In the 17th century, Formosa was invaded by many nationalities and the tribes were driven into the mountainous areas. The Dutch came in 1624 and settled the southern part. Two years later came the Spanish who occupied the northern part of Formosa. After a bitter struggle between the traders of the two European nations, the Spanish were finally driven out by the Dutch in 1642. Very soon the Dutch were alarmed by the increasing numbers of Chinese immigrants. In 1660 when the Ming dynasty collapsed, a loyal adherent by the name of Cheng Chen-Kung was forced to withdraw to Formosa. At the end of 1661 the Dutch were completely driven out by Cheng Chen-Kung. For the next 20 years Cheng Chen-Kung, his son and his grandson ruled the island as independent sovereigns. In 1680 the island was incorporated into the Ch'ing Empire. At the conclusion of the Sino-Japanese war in 1895 China

ceded Formosa to Japan. For half a century after its cession, Formosa was under Japanese rule. In 1945 after the Japanese surrender, the island was restored to China again. Formosa has been a place of struggle between Holland, Spain, China and Japan and at present it is one of the pivot points in world politics.

Strategic Location

China has two big islands, Formosa and Hainan, gazing at the disturbing Pacific Ocean. The two islands can function as protection for China, or as stepping stones if she should want to develop sea power. Formosa, however, is much more important than Hainan, both from the point of view of position and resources.

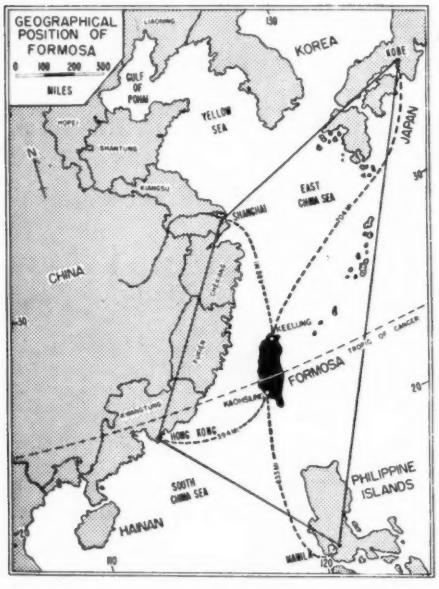

Fig. 1

Formosa is halfway between Shanghai and Hong Kong and midway between Japan and Indo-China. If we draw lines from Hong Kong to Shanghai and from Manila to Kobe, Formosa is at the point of intersection (Fig. 1). Considering the extreme ends of the island, Keelung is the main harbor in the north, and Kaohsiung is the principal port in the south.

There are seven provinces of China along the coast, facing the Gulf of Pohai, the Yellow Sea, the East China Sea, and the South China Sea. The East China Sea, the most important among them, is located in the center of the entire shoreline and at the outlet of the Yangtze River where the wealth of China is concentrated. Were we to choose a centrally located base along the Chinese coastline, the most logical site would be along the shoreline of Chekiang and Fukien provinces where the lines of communication are shortest between the northern and southern seas. Formosa is favorably located near this central point. It lies athwart the principal communication routes along the China coast. In this respect, Hainan is far less important than Formosa.

Being a large island with ample space for numerous airfields, Formosa stands like "an unsinkable aircraft carrier" before the shoreline of China. Airplanes can fly from this carrier in every direction to support ships and to make direct air attack. On the Pacific Ocean side of the island, mountains rise like a wall from the sea forming a great barrier. During the second World War the whole island served as a screen for Japanese shipping thru the Strait of Formosa.

Whenever the weather is clear, the outpost of the Philippine Islands can be seen from the southern tip of Formosa, and one can discern Okinawa from Keelung. Thus Formosa is not only a potential salient flanking the position of the Philippines and Okinawa, but also an important strategic island among the festoon of islands running from the frozen Arctic along the Asiatic coast to the South China Sea along the western rim of the Pacific Ocean.

SURFACE CONFIGURATION

Formosa is traversed by a mountain chain which forms a kind of back-bone, dividing the island into two distinct parts. However, this mountain chain is nearer to the eastern seaboard than the western. Accordingly, the eastern half has many crags and steep slopes. The sea cliffs rise perpendicularly for 300 feet or more and then slope to heights as great as 7,000 feet. It is typical mountain country, while the western part has gentler slopes and less relief (Fig. 2). It is on the western side of the island, with its alluvial plains sloping gently to the sea, that cultivation is concentrated.

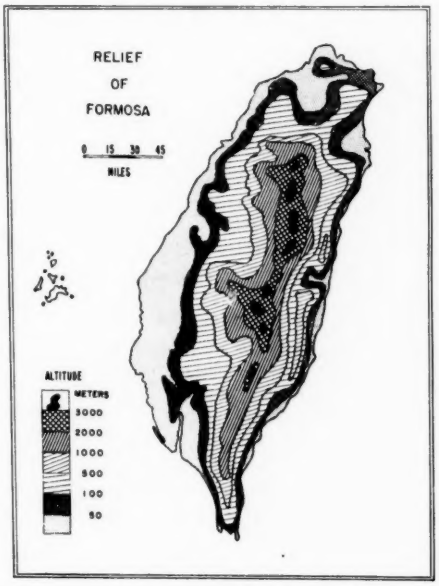

FIG. 2

The general configuration of Formosa is that of a tilted block, two-thirds of which has rugged terrain. The mountain peaks are high and the distance between these mountains and the coastal margins is less than 60 miles. Consequently most of the

streams which originate in the mountain region are short and swift and give the island a radial drainage pattern where the streams are deeply incised as they descend from the mountains. On reaching the coastal plain, the streams deposit their debris and build up the alluvial fans. Most of the streams, which are not navigable, rise suddenly and flood during the rainy season, frequently playing havoc with property.

The total shoreline of 700 miles of Formosa is monotonously regular with very few bays or inlets.

CLIMATE

Formosa has a subtropical climate with uniformly high annual temperature. The Tropic of Cancer passes thru the city of Chiyi. Summers are long, but being tempered by the sea, they are not unbearably hot. July is the hottest month. Winters are short and never severe with the coldest temperatures in February. Rainfall is abundant with many stations recording over 100 inches. The most striking feature of Formosa's climate is the typhoons. They seldom occur before May or later than November and are concentrated in August or September.

AGRICULTURE AND FOREST

High temperature, abundant rainfall and fertile alluvial soil make Formosa an excellent place for agriculture. Under these exceptionally favorable conditions, plant and animal life flourish in great abundance. The most important crops are rice, sugar cane and potatoes. Other products such as tea, sweet potatoes, and tropical fruits, as well as camphor, lumber, and marine products are of secondary importance.

Rice takes first place and accounts for over half of the total value of agricultural production. Two crops are harvested each year. Harvest for the first crop is June to July, and for the second, October to November. It is grown chiefly in wet fields in the northern part of the island. The southern part, on the whole, produces sugar cane, sweet potatoes, and tropical fruits (Fig. 3). Rice and sugar cane are competing crops, much land being suitable for either. Farmers have preferred, however, to plant rice rather than sugar cane, in part because the rice can be stored, whereas sugar cane cannot. The government usually gave assistance to sugar cane cultivation thru control of irrigation facilities or thru lower

taxation of land so utilized. Rice and sugar provide 70 per cent of the total value of agricultural production. As exports, sugar and rice equal the value of all imports. In 1949, rice occupied 1,852,500 acres and yielded 34,587,600 bushels. The rice yield per acre is much higher in Formosa than in Burma and Indochina. Before the War, of the total production of 45 to 50 million bushels, only about half or about 23 million bushels were consumed at home. Formosa exported about half of its rice crop to Japan each year. Rice is the highest valued cash crop.

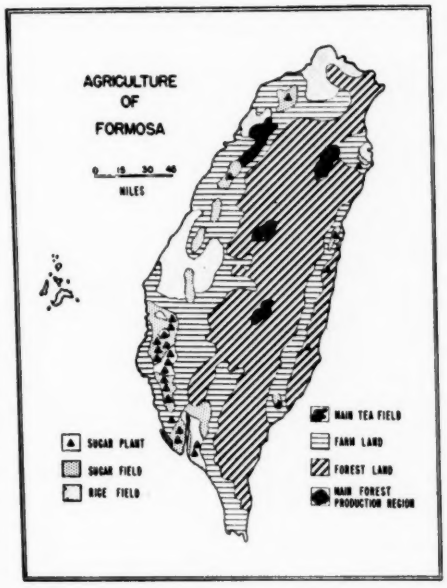

FIG. 3

Sugar, second only to rice, is the most typical industry of the sub-tropical island. In 1938-39, a record year, sugar cane occupied 400,876 acres and produced 1,562,000 short tons. Sugar cane refineries account for about 52.6 per cent of the total value of the island's manufacturing industry. The export of that year amounted to 1,441,000 short tons. Formosa has normally supplied nearly 90 per cent of the sugar requirement of Japan. The production of sugar in Formosa ranks fourth in the world and is only exceeded by India, Cuba and Java. It is the second most important cash crop for the farmers of Formosa.

The sweet potato is an indispensable article of diet in Formosa, and is next in importance to rice. The warm climate of the island with very rare visitations of frost is very well adapted for its growth. This plant is cultivated over almost the whole island thruout all seasons. In 1945 the cultivated area was 332,746 acres and the yield amounted to 1,165,263 metric tons. Most of the sweet potato crop is consumed on the island. Of the crop of 1,769,985 metric tons in 1937, exports amounted to only 65,466 metric tons. In addition to its use as food, some was used for fodder and some for alcohol. The per capita consumption was about 670 pounds. By comparison, per capita consumption of rice is only 260 pounds annually.

Tea forms an important article of trade. About 95 per cent of the tea production was exported. From 1928 to 1937 the export of tea amounted to one-third of the total value of all exported production of the island. Before the War the United States imported from 5,000,000 to 7,000,000 pounds of Oolong tea from Formosa. Exports of Pouchong or wrapped tea amounted to 2,987 metric tons, chiefly to Manchuria and North China. In 1917 the tea production amounted to 71,165 metric tons with cultivated area 111,522 acres. In 1945 the production was only about one-twelfth of the 1917 production but is again increasing.

Tropical fruits, such as pineapples, bananas and oranges are extensively grown. Pineapple products stand third in value among Formosa's farm products. The area of cultivation in 1938 was 23,740 acres. The crop consisted of over 234,329,284 pineapple trees yielding about 11,613,350 metric tons. In 1938 Formosa was the third largest producer of canned pineapple in the world, producing 1,000,000 cases out of a world total of 12,000,000, thus ranking after Hawaii (8,000,000) and British Malaya (2,000,000). By 1945 production had declined to only 1,752,199 metric tons.

Bananas are grown on many parts of the island, but 90 per cent of the crop is raised in Taichu and Kaohsiung. The cultivated area amounted to 51,472 acres in 1938, and the total crop to 201,652 metric tons. By 1945 the crop had declined to 32,153 metric tons, only one-sixth of the production of 1938. In 1949 the cultivated area increased to 41,990 acres and production increased to 70 per cent of that in 1938. Next to rice and sugar, bananas are the most important article of export, and tea ranks in fourth place.

Peanuts, tobacco, ramie, hemp, jute and other subtropical products are of some importance.

The eastern mountain region is unsuitable for cultivation, but it abounds in valuable mineral resources and virgin forests. The forests of Formosa, owing to their geographical position and climatic conditions, comprise an amazingly large variety of trees belonging to the tropical, subtropical, mid-latitude and even the semi-arctic zones.

The Arisan Forest is the most important, standing foremost in respect to extent, wealth and beauty. The forest lies at an altitude ranging from 2,800 feet to 8,700 feet above sea level, covering an area of 27,000 acres. The timber obtainable from this forest is estimated at 22,000,000 board feet.

Formosa, widely known as "land of camphor," supplies the major portion of the world's natural production. The United States, England and France were formerly important customers. Exports amounted to from 1,500 to 2,500 metric tons of camphor annually, and from 1,200 to 1,500 tons of camphor oil. Tea and camphor have constituted nearly 50 per cent of the island's direct exports to foreign countries.

MINERALS AND WATER POWER

The distribution of minerals in Formosa can be divided into three regions. Metallic minerals are mined in the extreme north, the central mountain area and along the eastern coast. In the northern lowland is the island's principal coal field. Petroleum is produced in the central and southern parts (Fig. 4).

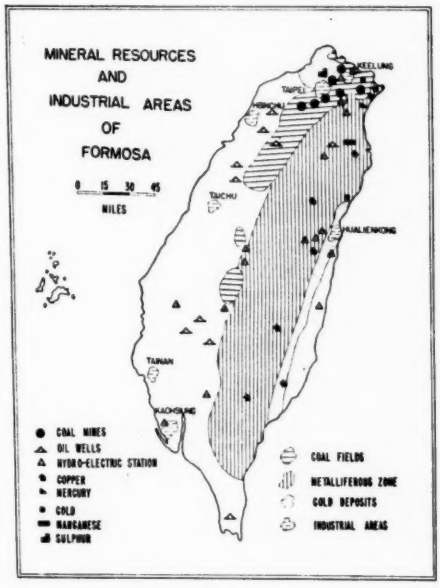

FIG. 4

Mineral production in the island includes coal, gold, copper, mercury, sulphur, silver, manganese and phosphates. Of these minerals the following are produced in considerable quantities and are worth special mention: coal, gold, copper, petroleum, sulphur and marine resources.

Coal deposits are found in the northern parts of the island, where 90 per cent of the output is produced, 10,000,000 tons of which are converted into coke. The production of coal is about 2,500,000 metric tons annually, of which about 1,000,000 tons are used on the island. The quality of coal in the south is poorer than that of the north, coal layers in the south being only three or four inches thick as compared with three feet in the north. Formosa's known coal supply is estimated to be sufficient for 100 years.

The gold mining industry comes next in importance. Gold is found in the extreme north and the east (Fig. 4). The most noted gold mines are those of Fuiks and Kinkwaser, where operations

are very active. The amount of gold production has increased yearly.

The copper obtained is of excellent quality and its production has steadily increased year by year. The petroleum fields are chiefly natural gas producers. Recent petroleum production has been estimated at about 35,000 barrels annually. Sulphur is concentrated at Taipeh where the principal solfataras are found. The extreme northern district of volcanic mountains abounds in sulphur pits.

Marine resources are significant to Formosa. Formerly about 175,000 metric tons of salt was produced. Salt beds have yielded about 44 tons of salt per acre. Production of crude and refined salt has been a primary manufacturing industry, providing the industrial salt for the chemical industry recently developed there.

Heavy rainfall on the mountains runs off in swift streams which provide an abundant supply of water power for hydro-electricity. In 1944 the island had a total of 321,000 kilowatts of electric power of which over 85 per cent were developed by the Sun-Moon Lake hydroelectric plants built in 1937. It is the vital stimulating factor and the main power source for the rapid development of the most important strategic industries of the island. Power from the plants is distributed to all parts of the west coastal region by 154,000 volt transmission lines. One line extends 116 miles to the north to the Taipeh and Keelung manufacturing centers and a second line reaches another 116 miles to the south to the Kaohsiung manufacturing region.

TRANSPORTATION

The transportation of Formosa is excellent. The number of public railroads, including main and branch lines, is 976 miles. The most important railroad is the main line between South and North Formosa (Fig. 5). This line connects Keelung, "The entrance of Formosa," and Kaohsiung, a port town of primary importance in South Formosa. It has a length of 254 miles with 79 stations.[1] Most of the principal cities in the island are along this line where the greater portion of staple products, such as rice, sugar and tea, accumulate for transportation. The line forms a main artery of passenger and freight traffic.

Besides the public railroads, there are private railways extending over 1,878 miles. These private railways were early started by sugar manufacturing factories and used largely for cane transport.

[1] Taiwan Communications, Department of Communication, Office of Governor of Taiwan, 1946.

Now they are open to the general public and are operated in close co-operation with the public railways.

The highways of Formosa are well developed. The most important ones are concentrated in the western plain of the island and run north to south parallel to the railroad (Fig. 6). The total highway mileage is 10,878 miles. It has the average ratio of 78 miles per hundred square miles.

FIG. 5

Overseas transportation is particularly important to Formosa. Lacking indention on its coastline, Formosa has but a few good ports. Of a total of 17 harbors of the island, Keelung, Kaohsiung and Hualiankong are the three biggest harbors. However, Kaohsiung Harbor was almost completely destroyed by Allied bombardment during World War II. The Hualiankong Harbor fared hardly better. Only Keelung Harbor was left comparatively intact. In addition to these, there is a new harbor under construction, the Taichu Harbor. With these four harbors, Keelung in the north, Kaohsiung in the south, Taichu in the east and Hualiankong in the west (Fig. 6), Formosa will have four main entrances, one on each side.

FIG. 6

POPULATION

In 1949 the total population of Formosa was 7,026,883. The Formosan people have had to fight many difficulties. Frequent earthquakes and typhoons have disturbed their island. Foreign

nations have subjected the island to their rule. Revolutions have been frequent. In fighting such odds these people have developed sternness, courage and a high sense of patriotism. Among the population, Chinese comprise 90 per cent of the total population, Japanese, 5 per cent, aboriginal tribes, 3 per cent, and others 1 per cent. The increase of population between 1930 and 1940 was at a rate of 27.9 per thousand. Among the total population there are about 6,770,000 who are born on the island, there are 60,000 who were immigrants from China before the Second World War, and 190,000 who immigrated after the War. In addition, the aboriginal tribes total 190,000. Most Chinese come from Fukian and Kwangtung provinces in China. According to 1928 report, Fukienese makes up 87 per cent and Cantonese 13 per cent.

Formosa has an average of 508 persons per square mile, but they are very unevenly distributed, varying from 711 per square mile in Tainan along the western coastal plain to 63 per square mile in Taitung of the eastern mountainous region. The five counties of Formosa which are located upon the Western plains have the great population density. For example, Tainan and Taichu are the most densely populated counties, having 25 per cent and 22 per cent of the total respectively. Taipeh has 19 per cent. Hsinchu and Kaohsiung have 14 and 13 per cent respectively. Eastern Formosa is the least densely populated district, Hualian has only 2 per cent and Taitung has 1 per cent.

According to 1930 occupational statistics, people engaging in agriculture and forestry comprise 67 per cent, trade 10 per cent, industry and mining 9.7, public service and professions 4.2, communications 3.5, fishing 1.6, and others 4 per cent.[2]

CONCLUSION

A region may be evaluated from two main points of view: one, the value of the region's space, the other the region's relative location. The former may be referred to as the potential energy of a region, and the latter as its strategic position. Few places rank high in both. For example, the value of Gibraltar's strategic position is very high, while the value of its space is very low. Formosa is one of the few places in which both strategic and space values are high.

Not only was the geographic background or setting of Formosa presented here, but also an attempt to estimate the value of the

[2] Civil Affairs Handbook of Formosa, United States Navy Department, p. 12.

island. We conclude that because of her great man power, rich and varied natural resources, well-developed communication system, and strategic position, Formosa is one of the main pivot points in the western Pacific. In the present controversy of Far East problems, we cannot know the exact role which Formosa will play in the future of the Orient, but we can be sure that whatever the exact nature of that role, it will be an important one.

WHAT SHALL WE TEACH IN JUNIOR HIGH SCHOOL GEOGRAPHY?[1]

MARIETTA COPPOCK WILSON
Florence Township Schools

At the request of the supervising principal of Florence Township Schools in Burlington County, New Jersey, a recent study was made in which 35 courses of study were analyzed to prepare a course of study in geography for grade 7 and to suggest content for grades 8 and 9.

The first step was to consider the opinions of experts in the field concerning values and needs of pupils and society of teaching geography in grades 7, 8, 9. From this research the hypothesis on which the study is based was formed.

PROCEDURE

The best and most recent courses of study were needed in this research. The sources of these courses were obtained by communicating with 1. Bureau of Curriculum Research, Teachers College, Columbia University; 2. Federal Security Agency, Office of Education, Washington, D.C.; 3. National Council of Geography Teachers; 4. National Education Association; and 5. New Jersey Department of Education.

Teachers College, Columbia University, granted a permit to use their library for one week, where all available courses of study in geography were examined.

Using the bibliographies from these sources, 135 requests for courses of study were sent to 35 New Jersey supervising principals

[1] This article is based on a master's thesis entitled "Geography for Grade Seven with Suggested Content for Grades Eight and Nine," written under the sponsorship of Dr. Adelbert K. Botts, Professor of Geography, New Jersey State Teachers College at Trenton.

and superintendents and to 100 boards of education, state departments of education or county superintendents in different parts of the United States. Table I shows the response.

TABLE I

RESULT OF 135 REQUESTS FOR COURSES OF STUDY

	Number	Per Cent
Course not available	22	16.3
No course	13	9.6
Sent price list	27	20.0
Use New Jersey State Course—1928	3	2.2
Revising Course	12	8.9
Sent course	30	22.2
No answer	28	20.7
Total	135	100

Table I shows that 79.3 per cent of the educators replied to the request for a course of study, even tho, in some cases courses were not available. Approximately 9 per cent were revising their present courses and some who promptly sent courses stated that they needed revising and that they had been waiting for new textbooks in geography to be published before starting revision. More than 22 per cent sent courses.

TABLE II

WAYS OBJECTIVES ARE EXPRESSED IN 33 COURSES OF STUDY

Method	Frequency of Mention
1	2
1. General aims of geography	7
2. General aims of social studies	9
3. No general aims	17
4. Aims of geography for grade 7	13
5. Aims of geography for grade 8	8
6. Aims of geography for grade 9	4
7. Aims of social studies for grades 7–9	2
8. Aims for junior high geography, 7–8	1
9. Unit aims—general	7
10. Unit aims—major and contributing	1
11. Unit possible outcomes	1
12. Unit minimum attainments	1
13. Point of view	1
14. Objectives—knowledge, skills, attitudes	4
15. Objectives—skills and attitudes	1
16. Objectives—understandings, skills, attitudes	2
17. Objectives—understandings and skills with skills subdivided into geographic and general	1
18. Objectives not listed but referred to page numbers in a bulletin that did not accompany course	1

The data collected consisted of 1. study and discussion guides containing resource units and pre-planning aids prepared by state departments of education and 2. outlines of courses of study by county superintendents, by county or local committees, or by the classroom teacher.

The usable courses were then checked for aims of the subject. Table II indicates the variety of ways of expressing objectives.

Table II indicates that the tendency in expressing objectives is to be original or to use a variety of ways. Seventeen of the 33 courses had no general aims. This may be because the state guide contained aims that were not repeated, altho only one course gave the reference to the state guide. Nine classified in some way knowledge or understandings, skills and attitudes but used 5 different methods of classification. In grade 7 almost twice as many gave grade aims only, rather than unit aims.

The data suggests studying the needs of the community where the present course is to be used and expressing the objectives of teaching geography in the most usable form.

The objectives of these courses of study were then tabulated and the ones most used are listed in Table III.

Table III reveals that 80.6 per cent of the courses emphasize the use of maps, globes and other aids. In grades 7 and 8 that objective leads; while among the general objectives for grade 9, it occupies second place. 1. Considering the geographic background in interpreting history and current events; 2. appreciating man's interdependence; 3. understanding the relationship between man's activities and natural environment; 4. developing sympathy, respect and tolerance toward all people; and 5. learning the value of conservation are mentioned in 10 or more courses. Acquiring geographic concepts, principles and thinking is used in only 8 courses and twice only in each group tabulated. This may be due to the fact that interpreting maps is so closely connected with geographic thinking.

The next step was to search several current references for recommended objectives which might be compared with the objectives presented in the available courses of study.

As a result of this study of 35 courses and 13 references the objectives were chosen that seemed to meet the needs of education in a democracy. The general objectives and specific objectives of this course of study were based on the purposes set forth by the

TABLE III

OBJECTIVES MOST USED IN 31 COURSES OF STUDY FROM 24 SOURCES

	General	Grade 7	Grade 8	Grade 9	Total	Per Cent of Courses
To use maps, globes and other aids	2	12	7	4	25	80.6
To form the habit of considering the geographic background in interpreting history and current events	2	11	3	3	19	61.3
To appreciate man's interdependence	2	7	6	3	18	58.1
To understand the relationship between man's activities and natural environment	3	5	4	6	18	58.1
To develop sympathy, respect and tolerance toward all peoples	3	6	2	1	12	38.7
To learn the value of conservation	2	4	3	2	11	35.5
To acquire geographic concepts or principles and thinking	2	2	2	2	8	25.8
To draw maps and use symbols	1	3	1	2	7	22.5
To understand the life of the peoples of other lands	0	5	2	0	7	22.5
To learn how man has modified his environment	1	3	1	1	6	19.3
To develop a feeling of interparticipation with the other peoples of the world in trying to solve our mutual problems or cooperation	0	4	1	1	6	19.3
To increase the ability to express ideas in various ways	0	2	3	0	5	16.1
To appreciate the democratic way of life	0	3	1	1	5	16.1

Educational Policies Commission, a committee of the National Education Association.

The specific objectives of each grade were tabulated to emphasize the geographical concepts or understandings explained in the hypothesis: 1. regional differentiation; 2. interdependence; 3. relation to environment; 4. changing geographic conditions; 5. conservation; and 6. relative location.[2]

The details of content of these courses were then analyzed beginning with an outline of subject matter. Table IV gives a summation of the grade placement in each of the grades and the rank of units in all three grades combined.

[2] Clyde F. Kohn, "Geography for World Understanding," *Social Education*, 9: 251-252. October 1945.

TABLE IV

RANK ORDER OF 30 TOPICS OR UNITS LISTED IN 35 COURSES OF STUDY FOR JUNIOR HIGH SCHOOL

Rank	Topic or Unit	Frequency of mention among			Total
		16 Courses Grade 7	12 Courses Grade 8	7 Courses Grade 9	
1	Asia	7	5	3	15
2.5	Latin America	8	2	2	12
2.5	Growth of Manufacturing	2	5	5	12
5	General Geography	3	4	4	11
5	Europe	3	5	3	11
5	Travel, Transportation, Communication	4	4	3	11
7.5	Africa	7	3	0	10
7.5	United States and Its World Relations	2	6	2	10
10	Australia	7	2	0	9
10	Canada	5	1	3	9
10	World Trade	1	4	4	9
12.5	Pacific Islands	7	1	0	8
12.5	Natural Regions of United States	3	3	2	8
12.5	Maps and Globes	2	1	4	7
12.5	Natural Resources of United States	2	3	2	7
15.5	Earth's Resources	2	0	5	7
15.5	Interdependence in the Modern World	3	1	3	7
19.5	Climate of United States	1	1	4	6
19.5	Home State	1	2	3	6
19.5	Review of Foreign Countries in Their World Relations	1	0	5	6
19.5	Conservation	0	2	4	6
22.5	Topography	0	1	4	5
22.5	Occupations of Man	1	2	2	5
25	Climate of the World	0	1	3	4
25	Our World Today: Economic, Political, Social	4	0	0	4
25	Distribution of Population	0	1	3	4
28.5	What Is Geography?	0	0	3	3
28.5	Polar Regions	2	0	1	3
28.5	Possessions United States	0	1	2	3
28.5	Soil	0	1	2	3

The tabulation in Table IV gives a picture of the rank of subject matter taught in the seventh, eighth and ninth grades combined. *Asia,* listed 15 times, leads in the total rank; but *Asia* is first in a total of only 15, which is 43 per cent of the 35 courses analyzed. This reveals that the program of the junior high school varies considerably.

Tables V, VI and VII show where the emphasis is placed in seventh, eighth and ninth grades respectively and a comparison is made of data presented in these tables.

Table V shows the rank in frequency of mention of what is being taught in seventh grade. *Latin America* heads the list of topics or units and is found in half of the courses studied. Altho

TABLE V

RANK ORDER OF 18 TOPICS OR UNITS LISTED IN 16 COURSES OF STUDY IN GRADE 7

Rank	Topic or Unit	Frequency of Mention
1	2	3
1	Latin America	8
3.5	Asia	7
3.5	Africa	7
3.5	Australia	7
3.5	Pacific Islands	7
6	Canada	5
7.5	Travel, Transportation, Communication	4
7.5	Our World Today: Economic, Political, Social	4
10.5	General Geography	3
10.5	Europe	3
10.5	Natural Regions of the United States	3
10.5	Interdependence in the Modern World	3
15.5	Growth of Manufacturing	2
15.5	United States and Its World Relations	2
15.5	Maps and Globes	2
15.5	Natural Resources of the United States	2
15.5	Earth's Resources	2
15.5	Polar Regions	2

Asia, Africa, Australia and *Pacific Islands* are second choice, they are listed in only seven or approximately 44 per cent of the 16 courses. The tendency toward a varied seventh grade program is shown.

In Table VI is the analysis of subject matter found in grade eight. *United States and Its World Relations* ranks first; but it is in

TABLE VI

RANK ORDER OF 15 TOPICS OR UNITS LISTED IN 12 COURSES OF STUDY IN GRADE 8

Rank	Topic or Unit	Frequency of Mention
1	2	3
1	United States and Its World Relations	6
3	Growth of Manufacturing	5
3	Asia	5
3	Europe	5
6	General Geography	4
6	Trade, Transportation, Communication	4
6	World Trade	4
9	Natural Resources of United States	3
9	Natural Regions of United States	3
9	Africa	3
13	State	2
13	Occupations of Man	2
13	Conservation	2
13	Latin America	2
13	Australia	2

only half the courses. *Growth of Manufacturing, Asia* and *Europe* tie for second place; they are in only 42 per cent. The fact that *Asia* is listed in the group of second choice in Grade VII with rank 3.5 and likewise in Grade VIII with rank 3 emphasizes 1. the agreement on the importance of a greater knowledge of Asia; and 2. the varied program in seventh and eighth grades.

Table VII lists the preferred topics or units found in ninth grade courses. It is significant to note that *Earth's Resources, Growth of Manufacturing* and *Review of Foreign Nations in Their World Relations* tie for first place and are in 71 per cent of the

TABLE VII

RANK ORDER OF 18 TOPICS OR UNITS LISTED IN SEVEN COURSES OF STUDY IN GRADE 9

Rank	Topic or Unit	Frequency of Mention
1	2	3
2	Earth's Resources	5
2	Growth of Manufacturing	5
2	Review of Foreign Countries in Their World Relations	5
7	General Geography	4
7	World Trade	4
7	Maps and Globes	4
7	Climate of United States	4
7	Conservation	4
7	Topography	4
14.5	Asia	3
14.5	Europe	3
14.5	Trade, Transportation, Communication	3
14.5	Canada	3
14.5	Interdependence in the Modern World	3
14.5	State	3
14.5	Climate of the World	3
14.5	Distribution of Population	3
14.5	What Is Geography?	3

courses studied. Six units tie for second place and are in approximately 57 per cent of the courses.

A comparison of Tables IV, V, VI and VII indicates that the tendency in junior high school is to acquaint the pupil with a variety of environments and that there is more general agreement in ninth grade than in seventh and eighth on how to do it. Probably this had some relation to fewer courses of study and fewer text available for ninth grade. However, the most recent books and literature on teaching geography state that there is a general recognition that the ninth grade pupil needs a greater knowledge of the distribution of earth's resources, of the use man makes of

them and of the culture of other nations in order to live effectively as a democratic citizen in an interdependent world. Here the pupil is more mature. It is desirable, therefore, to increase the power of geographic thinking, to build up a wholesome nationalism without depreciation of any peoples and to foster international understanding needed if we are to have one world at peace.

The 35 courses of study were then examined for recommendations concerning materials to be used, correlation with other subjects, activities, evaluation and texts. After the findings were tabulated, teaching methods were checked.

The course of study developed in this thesis was tested to determine whether the planned course of study would meet the needs and interests of the pupils. Part of the course was submitted to the three seventh grade teachers in Florence Township for a tryout. As a result of three conferences with the supervising principal and these three classroom teachers the content and presentation of the units were revised to include significant material.

Many of the audio-visual aids were used in seventh or eighth grade assemblies and, with the approval of the teachers, some of the filmstrips and picture sets were purchased for the school library.

The methods of procedure in preparing a course of study for grades 7, 8, 9 in Florence Township may be summarized as follows:

1. Courses of study were collected by communicating with 135 recommended sources in representative parts of the United States.
2. The most recent literature and texts for teaching geography were supplied by 10 book companies.
3. Books and magazine articles by leaders in the field of geography were used.
4. The aims of the subject and details of content were tabulated.
5. Part of the course was submitted to three seventh grade teachers for tryout and were revised.
6. Audio-visual aids were secured on approval.
7. The course of study was prepared in the light of these comparisons and in accordance with currently accepted practices among geography teachers in the United States.

CONCLUSIONS

The materials presented seem to warrant the following conclusions:

1. The best and most recent courses of study consider the significant characteristics of the pupil and the needs of a citizen in a democracy.

The most effective way to meet the needs of education in a democracy is to be aware and to make others aware of the ultimate needs of society which have not changed since the Master Teacher gave them about two thousand years ago.[3]

2. Altho the program of the junior high school varies considerably, it seems essential to teach more of Asia. Thus the child can understand that peoples of different regions are neither strange nor odd in the way they live but reasonable and natural in the manner they adjust themselves to their surroundings and to a changing world.

3. The fewer available courses for ninth grade point to the fact that geography is a neglected subject in ninth grade. There is a need for a required course of study in ninth grade. At this age pupils are mature enough to appreciate relationships and interrelationships. Mistakes that beginning air corps cadets have made in geography seem to furnish proof of American illiteracy in geography.[4] The teachers who made the tryout for part of the course of study state that the pupils cannot possibly learn all that is assigned to teach them.

4. The development of geographic thinking should be given precedence over the memorization of a great many facts for habits of thinking in terms of relative location and relationships are essential to understanding local happenings and world affairs.

5. A knowledge of the tools of geography and skill with which to use them is definitely needed to secure facts needed in geographic thinking about lands and peoples at home and abroad.

6. The future of the human race in an interdependent changing world depends upon a greater degree of conservation of natural resources which is the problem of everyone of us. The best way to conserve the resources of the world is to cooperate in establishing international peace.

7. Geography has something to offer not contributed by other subjects in the junior high school; namely, the ability to see how the people of the world live in their natural environment and why

[3] *Bible*, "St. Luke," Revised Standard Version, X: 27.

[4] Harry K. Hutter, "Mistakes Made in Geography by Beginning Air Corps Cadets," THE JOURNAL OF GEOGRAPHY, 43: 108-111. March 1944.

they live as they do. Geography should be taught as a separate subject because a knowledge of geography does more than any other subject to break down man-made barriers and to develop attitudes of good will toward all people and respect for the contributions of other nations and their problems, the hope of peace in a One World.

MATERIALS FOR FOOD AND PEOPLE DISCUSSIONS*

Two new booklets directed to schools have been made available as the UNESCO-sponsored "Food and People" discussion program swings into its second year.

They are "The Puzzle of Food and People," a geography reader issued by UNESCO—The United Nations Educational, Scientific and Cultural Organization—and "Food for All," the story of a sixth-grade experience, published by the Department of Classroom Teachers of the National Education Association. The first is available from the UNESCO Liaison Office, United Nations Building, New York City, and the second from the NEA, 1200 Sixteenth Street, Washington.

Many national, state and local organizations have joined in the discussion program since it was launched early in 1950 by the U. S. National Commission for UNESCO, in cooperation with the Food and Agriculture Organization, the U. S. Department of Agriculture and various private groups. Many thousands of UNESCO, National Commission and FAO booklets, leaflets and "fact sheets" were distributed, together with discussion guides; in addition, some 7,000 sets of six UNESCO pamphlets, published by a private printer and made available thru the UNESCO office in New York, were sold to discussion groups.

To organizations, school and group leaders who wish to undertake or continue "Food and People" projects, the U. S. National Commission for UNESCO suggests the following materials:

From the UNESCO Relations Staff

Address: Department of State, Washington 25, D.C.
"Food and People Fact Sheet" (Dept. of State pub. #3736).

* This short manuscript was adapted by the editor from a news release, UNESCO Relations Staff, Department of State, Washington, D.C.

"Food and People: A Discussion Guide." The basic piece for use by local groups participating in this program. The opening section, "Mrs. Smith Goes Shopping," has been successfully used in elementary schools for dramatic improvisations.

"Feeding a Hungry World," a radio script prepared by UNESCO.

"Tipping the Scales Toward Plenty." Picture story suitable for bulletin board and classroom use.

"The UNESCO Story"—A resource and action booklet for organizations and communities. 112 pp., illustrated. A "Food and People" chapter describes the program and contains suggestions for community action. Single copies will be sent teachers and group leaders. Additional copies are on sale (55 cents) from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

U. S. National Commission Poster: "Freedom Can't Grow in Lands of Hunger and Want—Let's Face the Problem of Food and People Thruout the World." (24 inches by 18 inches.)

"U. S. Agriculture in the World Food Situation": Pamphlet —52 pp.—written for the U. S. National Commission to encourage discussion, by Arthur P. Chew, U. S. Department of Agriculture.

A Film List for the Food and People Program. 6 pp.

FROM UNESCO OFFICE

Address: United Nations Building, New York, New York.

"The Puzzle of Food and People" a geography reader by Mrs. Amabel Williams-Ellis. 60 pp., illustrated. 60 cents.

The UNESCO Series: six pamphlets—"Food and the Family" by Margaret Mead, 24 pp., 25 cents; "UN Sets the Table" by Peter Kihss, 24 pp., 25 cents; "Food and Social Progress" by Andre Mayer, 24 pp., 25 cents; "Distribution of the World's Food" by Stefan Krolikowski, 24 pp., 25 cents; "Are There Too Many People?" by Alva Myrdal and Paul Vincent, 48 pp., 50 cents; "Food, Soil and People" by Charles E. Kellogg, 64 pp., 60 cents. Complete set (all six booklets including Discussion Guide) $1.65.

FROM FAO

Address: Dupont Circle Building, 1344 Connecticut Avenue, Washington.

"World of Plenty"—A picture booklet describing FAO

achievements. Captions and brief text are given in English, French and Spanish.

Poster: "FAO Shows How to Balance Food and People." (24 inches by 36 inches.)

Film Strip: "Food and People"; 58 frames. Shows that the people of the world can be fed properly, and describes steps already taken toward this end. Reading script included.

(Where no prices are given, single copies of any of the above are available free on request.)

OTHER MATERIAL

"Food For All: A Sixth Grade Experience," 32 pp., illustrated. 50 cents, National Education Association, 1201 Sixteenth Street, N.W., Washington 6, D.C.

"The Point Four Program." Popular leaflet, illustrated with pictorial graphs and photographs. (Dept. of State pub. #3347) 15 cents, from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

"Partners: The United Nations and Youth," by Eleanor Roosevelt, Helen Ferris, containing chapter on "Bread Is Peace." Published by Doubleday & Co., $3 at book stores.

"Need One Third of the World Be Desert?" Article by Ritchie Calder, English science writer on a UNESCO assignment. "New York Times" Magazine, July 9, 1950. Available in most libraries.

"Man and His Food." Color Film, 2 reels, 16mm. Children over a five-year period discover life on a farm, see new methods out-produce old farming techniques, also evidence interest in the UN. Some excellent shots of Lake Success are included. The producer, Mrs. Fayette Dow, has introduced a method of training school children to become a living soundtrack when the film is shown. Scripts and suggestion sheet for teacher provided. Makes excellent class project for use with "The Puzzle of Food and People." For information write: Harmon Foundation, 140 Nassau Street, New York.

"Economic and Social Problems in the United Nations: A Current Review" (monthly) free from Division of Public Liaison, Department of State, Washington 25, D.C.

"Foreign Agriculture" (monthly), $1.50 per annum, U. S. Department of Agriculture, Office of Information, Washington 25, D.C.

THE BARRANCA de COBRE

DR. IRVING W. KNOBLOCH
Michigan State College

One of the awesome wonders of the Western hemisphere, as yet unexplored in its entirety, is the canyon of copper known as the Barranca de Cobre. This colossal wonder, breathtaking in its expanse, is located in the Rio Urique, a tributary of the Rio Fuerte, both found in southwestern Chihuahua, Mexico. Few white people have visited the rugged canyon for it is of interest mainly to the mining profession. At certain spots the canyon is probably as wide and deep as the famed Grand Canyon, and indeed it may be deeper for no one has ever traversed its entire length with suitable recording instruments. The Sierra Madre Mountains, in which is found this natural wonder, is really the southern extension of the Rocky Mountains. The Barranca differs mainly from the Grand Canyon in its volcanic tufa rocks and abundant vegetation instead of sedimentary rocks and desert flora.

IN THE CANYON

As we mounted our horses on the rim for the ardous descent, we noted the forests of pines, oaks and other plants characteristic of high altitudes but as we descended the narrow, treacherous trail the vegetation gradually changed. Down and down we inched, more than 3200 feet, almost straight down in places, and for a full half-day. At the bottom of the abyss we were met by the Rio Urique, which in May was not to difficult to cross. Later, in the rainy season, it is impossible to ford except at certain points. The Cia Minera de Barranca de Cobre, whose guests we were, had rigged up an ingenious pulley and rope arrangement for use during the floods.

Here at the bottom, one was in a different world, hot, moist and semi-tropical (Fig. 1). The heat bounced from wall to wall and back into our faces. Down here, breezes were non-existent. Malaria is rampant everywhere but strangely enough, the native Indians have somewhat of an immunity to it and they are more affected by tuberculosis and the nutritional diseases.

Ferns and cotton trees (Kapok) are everywhere. No doubt there are many plant species unknown to science in the yawning abyss.

FIG. 1. General view of the canyon.

An oak (perpallida) collected there by the writer and his wife during a two week visit is the third known collection. Some ferns still await identification. Otters are not *supposed* to be in that area, according to the late Major Goldman, a former national authority, but they *are* there for I tried desperately to collect one seen swimming about in a pool. The best I could do was a plaster cast of the feet made from tracks in the sand.

All about us lived the primitive, peaceful and colorful Tarahumare Indians, 40,000 strong, according to the last census. These hardy folk, the only true cave-dwelling Indians on the North American continent are the largest tribe of Indians north of Mexico City (Fig. 2).

FIG. 2. A group of Tarahumare Indians on the trail.

They have chosen to live in one of the most non-agricultural and inhospitable regions on the continent but they have adapted themselves to it in a remarkable fashion. Many of them live in the higher altitudes during the summer, working their tiny plots. In the winter they retreat to natural warmer caves in the low-lands.

Their main problem is hunger and proper nutrition. They are dedicated to a corn, bean and pumpkin diet. Tiny fish from the river, lizards, insects and almost anything else that moves supplements their self-enforced vegetarian diet. We once saw four Tarahumares eke out their frugal diet by cornering a rabbit and eating it. Sheep they do have, almost exclusively for wool. Cattle they keep almost entirely for the manure, without which their slim agriculture would perish. On ceremonial occasions, however, a cow may be bled to death and absolutely everything except the "moo" and the hoofs are salvaged for some purpose or other.

Despite their dietary deficiencies, they are remarkably hardy and one frequently sees them in the city of Chihuahua, over two hundred miles from their haunts. Over mountain and plain they trot, on and on, tirelessly, effortlessly, subsisting on a little ground corn

or pinole and water. How long will it be before some enterprising promoter trains one of those famous runners for the Olympics?

Many of the Indians are pagans and these are the most interesting and colorful. It is a pity to substitute cheap, machine-made cottons for their hand-made clothes. The women are famous rug-weavers and under the press of civilization this art is dying out in many areas. While not as colorful as some Indian rugs, yet the Tarahumare blankets are sturdy and well-made. We gathered a dozen of these rugs, real museum pieces some day.

INACCESSIBILITY

Don't grab your hat and start out for the Barranca country unless you are a hardy soul. The travel is very difficult and the living accommodations do not meet the accepted standards of the American tourist. (We slept on a couple of boards thrown over two saw-horses once.)

The canyon is a long one and can be reached from both east and west. We took the train from Chihuahua to Creel and one should remember that this runs twice a week, and stops at no acceptable restaurants for the next 18 to 20 hours. We always took a large hamper of food and drink with us. Arrangements can generally be made at Creel for guides to the rim of the canyon. The mining companies generally build good roads and one should follow these when possible.

Real adventurers are in for a great treat. It is our fervent hope that such primitive areas shall always remain in their natural condition and that the hardy natives shall not be debauched by the "advantages" of our civilization.

CONSERVATION AND THE COLLEGE PROFESSOR*

J. RUSSELL WHITAKER
George Peabody College for Teachers

As more colleges offer courses in conservation of natural resources, it is unavoidable that many teachers who have had little familiarity with the field and no teaching experience in it will be asked to take part. I was surprised not so long ago by the aggrieved attitude of a college professor who had been assigned a course of this kind in his university. It is regrettable and quite unnecessary that a teaching field which can be most enjoyable should be entered with reluctance and apprehension. While this incident was still in mind, a former student wrote me that a re-organization of their university department of geography assigned him the responsibility of initiating a course in conservation of natural resources and that he would like suggestions regarding the content. The time seems ripe, therefore, for comment on this, a teaching field of great satisfaction.

THE FIELD AND ITS WORKERS

Unlike much that one teaches in geography and other fields, conservation centers on a contemporary human need. The problem —how to keep natural resources at needed levels of quantity and quality—is one of growing impressiveness. The shortage of water supply for New York's millions in the winter of 1949-50, for example, brought home to the people of our largest city that even for them there are direct, impelling connections with natural resources.

Natural resources, the materials provided by nature, are of wide range. We have mentioned water, which is considered by some students to set the ultimate limits to the number of people the United States can support. Closely related are mineral resources: ours is a way of life dependent on minerals to a degree not reached in other times or in many other lands. Altho we recognize the direct utility of economic minerals when removed from the ground, the service of rocks in providing the mineral content of soils is actually far more important in the long run. The most valuable use of soil is to grow domesticated plants. In addition, we

* Reprinted from the *Peabody Journal of Education*, 27: 329-338, May 1950, by permission of Dr. J. Russell Whitaker and the *Peabody Journal of Education*.

are concerned with soil management in the use of natural grasslands and of forest lands. Inhabiting water and land are wild creatures, which also are counted as a natural resource. The ocean, too, and the air are vast reservoirs of useful substances, both organic and inorganic. Nitrogen from the air, fixed in solid form in factories, helps to grow winter vegetables on otherwise unproductive soils. Men have taken salt from the sea water since prehistoric times, but far more valuable in our day are the living resources of the sea, fish and other living things.

This array of resources provides opportunity for all students of nature, no matter of what special interests. Much of the early support of conservation was from men whose daily lives brought them into direct contact with nature. Among these were naturalists, like John Muir, whose "one increasing purpose" became that of helping others to appreciate nature and to safeguard it. Also geologists, among them W G McGee, who placed the wealth of his observations at the service of Theodore Roosevelt and the National Conservation Commission; and foresters, such as Gifford Pinchot, who more than any one else was responsible for our national forest system. Chemists have been sought for advice on soil fertility maintenance and the purification of water supplies. The physical geographer has been impressed at every turn with the influence of man on the earth, on all aspects—lithic, hydrographic, atmospheric, and biotic. Both the basic and applied sciences have found a multitude of contacts with resource depletion and problems of conservation.

In contrast to physical scientists, students of the social sciences and humanities generally have been little concerned with the destructive effect of man on nature, in part, no doubt, because their work removes them from direct observation of the results. It is evidently easy to be so engrossed in political or social matters as to fail to see their genesis in resource impairment or their effect on resources. Even so it is certain that major opportunities for basic research and applications lie in the fields of study that focus on human behavior.

Actually many social scientists have found a challenge here. For example, Avery Craven, American historian, studied with remarkable penetration the soil depletion in colonial Virginia and Maryland. Arthur Hall, likewise prepared in history, has spent years investigating soil erosion in the southern Piedmont. George Wehr-

wein, land economist, gave much time to the economics of conservational resource management, as does Erich Zimmerman. A large share of S. V. Wantrup's time as an economist goes to the same inquiry. Nathan Whetter, sociologist, is sounding the need for recognizing the place of customs and mores in this aspect of human behavior.

I am convinced, indeed, that the greatest need for the near future is not so much for knowledge of how to manage resources as to get men to apply the knowledge we have. This requires a better understanding of the relation of human behavior to resource destruction and conservation. As a Department of Interior executive has said, there is great need for an understanding of how to get things done within the framework of our American social, economic, and political order. In the last analysis, resource management is a matter of human behavior. The special points of view and techniques of students of man as well as of nature should be brought to bear on this question.

Each specialist can approach the problems of resources destruction and conservation from his own angle, but there remains the need for combining these views into wholes, or rather of seeing the wholes as they exist. This need appears clearly in plans for valley development, in the use and care of parks, and in the management of national forests. Comprehensive views can be secured thru conferences of specialists, and by parcelling out the task among various specialists and combining the results. Even so, resource generalists are needed, men whose interests and activities have carried them beyond a narrow pre-occupation with a single phase of the natural resource complex.

If the need for whole views is essential in practical work it is equally or more desirable in conservation education. In a democracy the entire natural-resource base is the concern of its citizens. The specialists may perform their tasks, say of water purification, with little or no concern for multiple use of the river from which the water is drawn; but not so the citizen, who should have a balanced view of the many problems of the drainage basin. To this end there is need for courses of comprehensive coverage, particularly at the college level, and for persons who are willing to undertake the arduous labor of studying the whole field. Broad-minded teachers and writers are necessary if adequate courses and literature are to appear.

Some disciplines lend themselves more effectively to the preparation of resource generalists (whether practitioners or teachers) than do others. The more fruitful disciplines are of wide scope: notable for comprehensive views are economists, geographers, and biologists and their relatives the foresters.

Biological writers were especially vigorous during the 1930's and 1940's. One recalls Paul Sears, whose *Deserts on the March* combines high merit in composition with a broad understanding of resource problems. To this list one should add Edward Graham, author of *Natural Principles of Land Use,* William Vogt and his *Road to Survival,* and Fairfield Osborn and *Our Plundered Planet.* Biological phenomena in their actual natural setting are indexes to soil and water as well as being potential resources in their own right. Altho biologists may ignore mineral resources, all of the other major resources come directly or indirectly under their eye. It is apparently easy, moreover, for the biologist of ecological bent to escape thru the ceiling set by the limits of his discipline to a broader range of observation and application.

Just as some biologists can become completely engrossed in laboratory studies to the eclipse of ecology and related problems in resource management, economists can become so involved in price relations as to have little inclination or time for the resource setting of human activities. They can get so wrapped up in the tape of the stock exchange as to get no farther than prices and papers, but they may discover that economic activity is dependent on natural resources if they inquire into the basis of real wealth. Among economists, those concerned with "land economics" have been especially vigorous in the study of conservation. It is not surprising that of the three general courses covering the conservation of natural resources in a state university, one was given by a land economist. The other two were taught by a forester-wildlife specialist and a geographer.

The geographer may lack detailed knowledge of an individual resource and its management, but he is interested in all resources, especially as they are related to one another and to man. Moreover he is concerned with both the human and the natural resources of an area. This interest in the total resource complex is strengthened by the geographer's concern with both *generic* and *specific* regions. A generic region is one marked out by a given class of phenomena, such as wheat production or coal and coal mining. A

specific region is one identified in terms of the unique traits that make it up, or unique combination of traits, such as the Upper Lakes Region. The recognition of generic regions facilitates comparison, so that the geography student finds it easy to bring the lessons on resource management learned in one part of the world to bear on another; in the specific region he considers the resource combination, thus achieving an essential reality of approach. Traditionally, too, geographers have been concerned with the interrelations of men and resources. An evaluation of those relations in terms of human needs leads easily to a consideration of the destructive and constructive effects of men on resources, of mismanagement and of wise management of resources. It is not surprising that geographers have had a significant part in comprehensive programs of resource management. Geographers have also taken the leading part in the development of college courses in this field.

One may well inquire, at this point, into the qualities of mind of the resource generalist. One trait is an appreciation of all the major earth resources as essential to human well-being. This calls for a broad view—no narrow specialist can qualify. Moreover he must be concerned with human values. Here enter the viewpoints characteristic of the social sciences and humanities. A sense of values depends on a knowledge of human kind and of human needs. The resource generalist is one who delights to observe and to reflect on both man and nature.

To those requirements we may add a sense of place and time. One may isolate the factors responsible for soil erosion, and speak of them as tho they were of universal application, like chemical reactions, but the fact remains that the resource to be conserved, the mal-practice to be corrected, is unique in its place and time associations. Soil erosion in Georgia is a different problem from that in Arizona or Minnesota; and soil erosion in Georgia clearly presents a different problem in land management in 1950 from that a hundred years ago. The person who would perform as a resource generalist in conservational resource management should have a large measure of appreciation for the concrete realities of time and place, for the unique combinations from area to area of natural resources and human desires and capacities.

THE CONSERVATION COURSE

College teaching is one of the more common fields of activity

of resource-generalists. From college men go into legislative halls, into business where they can actually steer resource management, and into teaching the young people of the land. Suitable courses go by various names, but "conservation of natural resources" is the most common label.

A series of lectures given 40 years ago by Charles R. Van Hise at the University of Wisconsin was probably the first course of its kind in this country. He was then president of the University, and a geologist by profession. He credited the breadth of view of his lectures and the textbook compiled from them and published in 1910, to the activities and reports of the National Conservation Commission set up by President Theodore Roosevelt. The lectures by Harlan H. Barrows when professor at the University of Chicago date back almost if not as far. Courses based on Van Hise's book and its revision by Loomis Havemeyer and others, on Barrows' lectures, and on the other assembled materials have continued to the present time. What are some of the conclusions one reaches regarding this course, particularly those that may have value for college teachers who contemplate giving such a course or who are recent initiates?

The Teacher. First a comment on one's route into the field. Until the time comes when it is possible to receive rich academic preparation, it will be necessary for each instructor to enter by way of his specialty. As a friend put it when asked to give this course, "I fear it will be largely geography in the beginning." So it should be for the geographer—he should give a large share of the time to geographic patterns of resources and resource problems, to the unique aspects of individual regions, to an evaluation of man-resource relations. From these flow certain implications for conservational resource management. In all probability an instructor with this preparation will give at first relatively little attention to institutional questions, to economic devices, or to legal arrangements.

An economist, on the other hand, is likely to be more familiar with costs and with economic obstacles to the introduction of improved land uses. He will be more sensitive to the need for institutional changes. A political scientist finds the governmental aspects of the subject most familiar territory.

No matter what the original approach, the instructor will soon feel an urge to wrestle with the whole problem; and he will dis-

cover that his students are not obstructed by the academic mental fences, the departmental limits, which cause him to pause. They vault these fences, or burrow under, or even walk thru them as tho they weren't there, and look back, wondering why their instructor is lagging behind instead of leading. And so he moves on from the geography or economics or politics of conservation to attempt to grasp the whole problem in a well-balanced way. Granted that his treatment may ever be biased, strongest in the area of his special preparation, it will be far better than the original, more restricted view. It will provide a framework into which he and his students can fit the findings of workers in many fields. But to work on this broader plane requires as not before the twin virtues of scholarship and courage—the first because one's judgment is now being exercised in less familiar fields, the second because of the timidity engendered by boundaries and vested interests of the academic world, as well as by an awareness of one's own limitations.

Moreover, the teacher of a well-balanced course in conservation, one that transects many fields of endeavor, finds himself obliged to search those various fields for valuable ideas, illustrations, and judgments. The findings of a wildlife manager are relevant, as are those of a student of congressional legislation. The instructor must know enough about these different fields, too, to advise students who wish to pursue their own special interests.

The conservation teacher finds also that the diversity of student background and interest is a source of instruction for him, and of enlightenment for his students. Each of them comes into the class with unique experiences which provide illustrations of principles and of regional applications. One may know of the difficulties encountered in the wise use of irrigation water, another of the fouling of public beaches by oil. One has worked as an employee of the Soil Conservation Service, another of the National Park Service. If given the opportunity, each of them can contribute to the total structure of knowledge and attitudes being constructed by the individual members of the class.

Objectives. As time passes and the instructor's grasp of conservation enlarges he may become alarmed by its magnitude. When men find satisfying careers in narrowly restricted segments of the whole field, how can one man hope for satisfying performance in the whole! At this point it is well to remember that citizens are called on for judgments in these matters, even if specialists are

not. As a teacher, can he find a way thru the welter of fact and opinion? When so overwhelmed the instructor may well review his objectives as teacher of a class in conservation of natural resources.

Fundamental is a clear awareness of the purpose of the study, namely an inquiry into more effective stewardship of resources. It seems necessary to warn against the study of resources *per se*, of soil as soil, of birds and trees and fish, of nature study that stops short of an inquiry into the management of the resources. So many problems are labeled "conservation" that the teacher must be on guard. Materials should be selected to bear on the problem of keeping resources in the most useful condition.

In following this theme one should direct attention to all of the main aspects rather than to a few. Here is probably the best if not the only opportunity the students will have to see the whole field. However strong the temptation to go greatly into detail at any one place, that must not be done at the sacrifice of more comprehensive views. This principle requires selection of materials, for time-limits make that necessary if the whole field is to be covered.

Selection is guided by another objective, that of introducing problems and policies rather than giving precise details of resource management. Some details are desirable to make the study concrete, to aid in field identification, and to introduce the resource user to the more immediate possibilities for action by every citizen; but most details of resource management belong in a practical handbook, as on forest care or soil erosion control.

With this emphasis on general policy goes the need for building up an appreciation of the significance of natural resources in human living. Here details of a different kind are needed—specific studies of resource management and abuse. These details need not be memorized or tested on examinations. They serve their purpose in contributing to an appreciation of resources and an understanding of resource management. One might almost be justified in saying that the content of a conservation course consists of broad understandings about local, regional, and national needs and resources, of general ideas regarding resource management, and of vivid details on which these general principles and geographic understandings depend.

Organization. The organization of a course in conservation might well be guided in part by the objectives noted above, both as regards general coverage and detail. On the other hand, the nature

of the subject matter and the history of conservational thought also affect the plan. One general plan is in accepted use in this country, that of analysis by contrasted resources, but it is being modified in two ways: by recognizing resource combinations, and by taking account of regional uniformities and unities.

Natural resources most likely to be depleted fall into four groups: earth materials (minerals), soils, waters, and living things. In terms of use, these fields can be viewed by raising specific problems; moreover, special combinations can be recognized. Thus instead of soil as such, we are concerned with cultivable land in humid regions, with dry farming land, with irrigable and drainable land. Moreover, in actual practice as well as study, there are various combinations of these basic four: forest land, for example, involves not only natural vegetation but also wildlife, soil, and water.

This analytical or topical approach has several values as a plan for study. Attention of the students can be directed to one thing at a time. Each environmental element is widely distributed over the country, so applications can be made to the various regions in which different students might be interested. These main phases correspond, roughly, to special fields of inquiry (a notable exception being water) so that reading materials are available. These are values of genuine merit, for the student must grasp a complex situation part by part and source materials are essential.

For usable outlines and readings the prospective teacher of a college course in conservation of natural resources is referred to three books. *Conservation in the United States,* by A. F. Gustafson and others, Comstock Publishing Company, Ithaca, N.Y., was revised in 1949. *The Conservation of Our Natural Resources,* edited by Guy-Harold Smith, John Wiley and Sons, appeared in 1950; and *American Resources,* by J. R. Whitaker and E. A. Ackerman, Harcourt, Brace and Company, was published in 1951. Doubtless most college teachers will want to make liberal use of all three of these books, for personal use if not for class reference.

REPORT OF THE THIRTY-SEVENTH MEETING OF THE NCGT

More than 400 members and guests of the National Council attended the meetings on November 23-24 at Hotel William Penn, Pittsburgh, Pennsylvania. At least 25 states were represented and Canada and Germany. More than 200 Pennsylvanians attended and more than 20 from each of the states of New York, Ohio, and Illinois. Registration showed that about the same proportion were from the teaching levels of the grades, high school and colleges. Graduate students and teachers college members were in about the same number, with administrators and supervisors following. More than 275 were present at the first general meeting at 9:30 Friday morning. The complete program appeared in the October 1951 issue of the Journal of Geography.

The over-all theme of "Geographic Understandings in a Time of Crisis" was developed from different points of view thruout the program.

At the noon luncheon guests were grouped at tables where blue and gold placards indicated interest-topic discussions.

Two sectional meetings with demonstration lessons that afternoon were at the University of Pittsburgh. Displays of the work of children from many schools in western Pennsylvania filled four classrooms. The trip thru the Nationality Rooms afforded an insight into the many culture groups living in Pittsburgh. Tea, at the courtesy of the University of Pittsburgh, was served in the main Commons Rooms. A section for college level was held at the hotel. Attendance at each of these sectional meetings was about 80.

The banquet was attended by 140 with Acting President Kohn as toastmaster. The address was made by Professor George J. Miller, long time Editor of the Journal and one of the "starters" of the National Council. His topic, "Rest and Rust," took a backward and forward look at the annals of the Council.

The recipients of the Journal of Geography Prizes were announced by Editor Thomas F. Barton. The George J. Miller Prize for an article dealing with some phase of education or helpful suggestions to teachers: Mrs. Gladys Hickman, University of Bristol, England, for the article, "The Sample Study—A Method and Its Limitations" in the April 1950 Journal of Geography. The J. Paul Goode Prize for an article with graphic or cartographic presentation; John E. Brush, Rutgers University, for the article, "Divided India" in the September 1948 Journal of Geography. For the first time, the Elementary Geographic Education Prize for an article on the techniques of teaching geography to: Mrs. Adelaide Blouch, Lakewood, Ohio, Public Schools, for the article, "City Studies in the Elementary Grades" in the November 1948 Journal of Geography. Each award is $25.

The Distinguished Service Award Citation was read by Acting President Kohn. The name of the recipient was announced in the very last sentence, thus adding to the suspense and interest. Dr. Zoe A. Thralls of the University of Pittsburgh received this award in recognition of her leadership and outstanding contributions to geographic education and research over the years. The Citation appeared in the January 1952 issue of the Journal.

Informal visiting marked the close of the banquet events.

The Saturday morning sessions were very well attended. Then in the afternoon 95 members and guests in three busses took a field trip about the city to see housing developments, industrial sites, the Planetarium, and enjoy a ride on one of the inclined railways. Altho the skies were overcast part of the weekend, neither snow nor blow delayed the departures from Pittsburgh!

MINUTES OF THE FIFTH GENERAL ASSEMBLY

At 11:20 Saturday morning with 60 members present the business meeting was called into session.

The Secretary reported that membership had maintained a high level in spite of increased problems. Members were urged to send in suggestions as to ways to double membership. The success of such a plan would reduce costs of publication of the JOURNAL OF GEOGRAPHY since unit costs decrease by spreading them over a larger number of units. This year 95 members attained the status of FELLOWS—meaning they have been members for five or more consecutive years. The present list of Contributing Members numbers 67 names. This is a splendid record—indicating the faithfulness and devotion of so many members. To them goes a measure of pleasure and some degree of satisfaction for having made possible the growing publications program. So far 108 members have been on this list at one time or another.

Treasurer John H. Garland reported on the sound financial condition of the National Council and that the books had been properly examined by accountants who found the records in order.

The report of the Publications Committee summed up a program of more than four years of activity. During this period Papers No. 9, 10, 11, 12, a volume in the Geographic Education Series entitled *Geography in the High school,* and the Map of World Air Transportation have appeared. The sales of publications have been increasing. The plan of bonus publications continues and the coming year will see at least two more in press. The retiring committee is indebted to George J. Miller for his many helpful suggestions and guidance in the first years of this publication program.

President Kohn commented on plans for the future and what might be done to continue the effectiveness of promoting geography education. Seven committees are actively carrying on projects and three more are to be appointed. He emphasized the need for "grass roots" thinking by the classroom teacher, supervisors, and superintendents. Members are encouraged to write their officers with suggestions and needs, as well as names of willing workers to work on projects. Several workable suggestions were made from the floor by members as to ways and means to stimulate interest of the public and among teachers of geography.

The Nominating Committee with Floyd F. Cunningham as chairman presented the following slate of candidates:

President, Clyde F. Kohn, Northwestern University

First Vice-President, Henry J. Warman, Clark University

Second Vice-President, Mamie Anderzhon, Oak Park, Illinois, Public School System

Secretary, Ina C. Robertson, State Teachers College, Valley City, North Dakota

Treasurer, John H. Garland, University of Illinois

For membership on the Executive Board for three years, 1952-54, Byron Barton, Charleston, Illinois; M. Melvina Svec, Oswego, New York, Lillian Worley, Knoxville, Tennessee.

No nominations were made from the floor. Dr. George B. Cressey moved that the report of this committee be accepted. Dr. A. H. Meyer seconded the motion which carried unanimously. Dr. Kohn directed the Secretary to cast a ballot for the slate of officers.

THE REPORT OF THE RESOLUTIONS COMMITTEE

The Resolutions Committee presents the following report to the National Council of Geography Teachers assembled in Pittsburgh, Pennsylvania, November 23 and 24, 1951.

Be It Resolved that the National Council of Geography Teachers express appreciation:

To the City of Pittsburgh and its well known University of Pittsburgh, the Pennsylvania Council of Geography and Western Pennsylvania Club, and particularly to the Committee on Local Arrangements, and the members of the National Council who have contributed in one way or another to the definite success and many pleasures of the meetings.

To the Office Staff and other personnel of the William Penn Hotel for their hospitality and courtesy in providing us with such effective accommodations for the meetings.

To the publishers, whose exhibits at this conference contributed so much to the success of the meetings, just as they have in the past.

To the Officers and Committees of NCGT for their helpful attitude, efforts, and accomplishments, and especially to the retiring Secretary who for the last three years has given of her abilities and time and service beyond what might be expected in the regular line of duty.

Be It Further Resolved, that:

The National Council of Geography Teachers records its deep sense of personal loss in the passing of the following members: R. G. Buzzard of Kansas State Teachers College, Emporia; Clyde Cooper of Athens, Ohio, and a former president of NCGT; H. O. Lathrop of Illinois State Normal University and President of NCGT for the year 1951-1952; Margaret T. Parker, formerly Head of the Department of Geography at Wellesley College; and Ina Yoakley of East Tennessee Teachers College at Johnson City. The loss of Dr. Lathrop was indeed untimely, because only a few months earlier, he had assumed the leadership of the Council, and a good leadership it was, for the 1951-52 period.

In submitting this report, the Resolutions Committee recommends its adoption. It further recommends that these Resolutions be recorded upon the Minutes of this meeting and that the Secretary send letters of appreciation to individuals and organizations, and letters of sympathy to the respective families.

Earl B. Shaw, chairman
Henry J. Warman
Katheryne Thomas Whittemore

The meetings adjourned at noon, thus closing the meetings of the 37th year of the National Council's work.

M. MELVINA SVEC, *Secretary*

NATIONAL COUNCIL AT WORK

THE NATIONAL COUNCIL IGU FUND

As previously announced, the 1952 meeting of the National Council of Geography Teachers will be held in Washington, D.C., August 6-7, at the Statler Hotel. The meeting will be held in connection with the 17th Congress of the International Geographical Union. It is hoped that most members of the Council will plan to attend this year's summer meeting and enjoy the opportunity of meeting geographers from all over the world.

To defray the expenses of such a gathering, funds are being raised by various geographic organizations. The Executive Board, of the National Council at its Pittsburgh meeting in November, voted to contribute $500.

Some members have expressed a desire to make personal or anonymous donations to increase this overall contribution of the Council. For this reason, a fund, *The National Council IGU Fund,* has been established. If you wish to make any contribution for even a modest sum, you may do so by sending your check or money order to Dr. John H. Garland, Treasurer NCGT, Department of Geography, University of Illinois, Urbana,

Illinois. Make your check payable to the *National Council IGU Fund*. Do this before May 1. At that time, the money accumulated in the fund will be turned over to the Finance Committee of the Congress. You may be sure that any contribution from you will be sincerely appreciated by the National Council and by all other cooperating agencies responsible for planning and financing this important international event in geography.

INCREASING THE EFFECTIVENESS OF THE NATIONAL COUNCIL

By the Work of the Officers and Executive Board. Since December 29, 1946, the management and work of the National Council has been under the direction of the Executive Board composed of six officers, the most recent three past presidents, and six elected members, each of whom serves a term of three years. Your Executive Board for 1951 is composed of:

Clyde F. Kohn, President, Northwestern University, Evanston, Illinois.
Henry J. Warman, First Vice-President, Clark University, Worcester, Massachusetts.
Mamie Anderzhon, Second Vice-President, 112 N. Marion Street, Oak Park, Illinois.
Ina Cullom Robertson, Secretary, State Teachers College, Valley City, North Dakota.
John H. Garland, Treasurer, University of Illinois, Urbana, Illinois.
Thomas F. Barton, Editor, Indiana University, Bloomington, Indiana.

Earl B. Shaw, State Teachers College, Worcester, Massachusetts.
Mary Viola Phillips, New Kensington Public Schools, New Kensington, Pennsylvania.
Ralph E. Olson, Oklahoma A. and M. College, Stillwater, Oklahoma.

Loyal Durand, Jr., University of Tennessee, Knoxville, Tennessee.
Annice Davis Elkins, Osceola County School Supervisor, Kissimmee, Florida.
Elizabeth Eiselen, Wellesley College, Wellesley, Massachusetts.

Lillian Worley, University of Tennessee, Knoxville, Tennessee.
Byron Barton, Eastern Illinois State College, Charleston, Illinois.
M. Melvina Svec, State University Teachers College, Oswego, New York.

In order to facilitate the administration of Council affairs, several committees have been appointed by the Board, each with specific duties to perform. The following Administrative Committees are now at work on matters pertaining to Council affairs. It is the hope of the Executive Board that thru its officers and these Administrative Committees the effectiveness of the Council may be greatly increased in the forthcoming years.

Clyde F. Kohn, *President*

GEOGRAPHICAL PUBLICATIONS

Margaret Otto and Stuart Otto. **The Truck Book.** William Sloane Associates, New York, 1949. 64 pages, illustrations. **$1.75.**

Margaret Otto and Stuart Otto. **The Boat and Ship Book.** William Sloane Associates, New York, 1951. 64 pages, illustrations. **$1.75.**

Tho primarily a book to be read by upper primary and intermediate grades, *The Truck Book* would be enjoyed by children of all ages. The 45 trucks described, are illustrated in black and white photographs. Each truck is pictured so clearly and in such detail that it tells a story in itself. Young children would particularly enjoy looking at the pictures once the story is read to them.

The pages are printed in two columns which makes the reading of the story more pleasant. The size and intensity of the print against the dull paper makes for added reading pleasure.

There is a definite attempt to keep the vocabulary elementary so that the words can be easily understood. Explanations of new and technical words are cleverly woven into the story.

From the small pick-up truck to the trailer-train, the authors explain not only how the truck operates but also the way in which certain trucks have been designed to meet geographical conditions and economic needs. The trucks and their parts are described simply but in correct technical language.

While *The Truck Book* would be attractive to children for pleasure reading, its value to intermediate and junior high grades as a reference book for geography and science would be greatly enhanced with the addition of an index.

The implications the authors make of the need to adjust in terms of one's environment as well as the need for cooperation makes this book a fine addition to any child's personal or classroom library.

The strengths of *The Truck Book* have been retained by the Ottos in their *Boat and Ship Book*. In this later book, more stories begin on a new page and a table of contents has been added. A technique for pronouncing unfamiliar words is included in the stories.

The Boat and Ship Book describes the shape and operation of boats that give us pleasure, find food for us, carry people or goods and protect our lives and property. The entire book stresses the services boats render people of the world. By beginning with a rowboat, terms like *bow* and *stern* are introduced slowly and carefully so that the reader will understand their use in discussions of the more complicated boats. In some instances, however, there are so many new terms introduced within a few pages that it becomes confusing to the younger readers.

Because of their historical and current interest, boats like the *U.S.S. Williamsburg* and the *U.S.S. Constitution* are woven into the stories about similar types of boats and ships. This helps maintain a high level of interest from beginning to end of the book. Boats of modern warfare are described with a minimum of technical language.

This book would interest readers of all ages. Very young children would enjoy the pictures. Elementary school children could read much of the material with little help while junior high children would find this an excellent reference book. For adult geography students who have never lived near large bodies of water or who have not before been particularly interested in boats, this book would aid in giving them a background of information about the different kinds of boats and the ways in which they are operated.

RUTH SUGARMAN

New York State College for Teachers at Buffalo

Albert N. Williams. **The Water and the Power.** Duell, Sloan and Pearce, New York, 1951. xiv and 378 pages. 38 maps, 16 page illustrations. **$4.50.**

This book is written in a popular manner about the five great rivers of the West: the Colorado, the Sacramento and Jan Joaquin, the Rio Grande, the Missouri and the Columbia. The historical development in use of the rivers for irrigation, power and navigation is emphasized, as are the interrelations between man and the multiple uses made of the rivers.

Mr. Williams is a trained writer rather than a geographer or other scientist. His choice of words is frequently for effect and may be scientifically inaccurate. For example, a geographer cringes to read that the Colorado delta is a "besilted tundra" and that dry desert soil is a "stockpile of organic materials." Actually such soil lacks organic materials and possesses mostly chemicals of mineral origin.

The Water and The Power is interesting reading and can well be used to supplement official publications that are more accurate but less attractive to read. The book will be valuable to those who desire general information about the power development and other uses of Western rivers and are not concerned with engineering details or scientific accuracy. It is in general an interesting and well written book. Sketch maps and several illustrations supplement the text.

OTIS W. FREEMAN

Eastern Washington College of Education

Henry Gibbs. **Twilight in South Africa.** Philosophical Library, Inc., New York, 1950. 288 pages, 49 illustrations. **$4.50.**

With apparently less than a year actually spent in the country, backed by much previous study of its history and present development, the author of this most readable book has focussed his spotlight on the things that everybody wants to know about South Africa. The reader gets a succinct but interesting account of the country's history and present economic conditions, a penetrating study of personalities in the political scene, and just those feelings and impressions that make the observations of an experienced visitor so revealing alike to the stranger and to one long resident in the country. The value of these observations is greatly enhanced by a masterly command of language which enables the author to leave sharp impressions in the reader's mind without straining after the dramatic.

The greatest value of the book, however, is its contribution to the understanding of the race relations situation, and the conviction grows in the reader's mind that when South African gold and diamonds have been forgotten the country's contribution to the world's experience of race relations will probably be the one thing that will endure. By those in close touch with the country it is generally realized that something is being lived out in South Africa which can contribute powerfully to the world's understanding of the nature of the human race. The author leaves us in no doubt that this contribution may be in the nature of a disaster that will have the effect of a warning, or, on the other hand, it has the possibility of being a constructive experience for which the rest of the world will be grateful.

In analysing the attitudes of the English and Dutch in race relations the author, an Englishman, has rather too lightly excused the British section of the population for their failure to pull their full weight in the country's political life, and altho it seems unquestionable that the Calvinistic outlook of the Dutch section colors their outlook and channels their thinking on these racial matters, the real root of the strain is not political indifference on the one hand nor a belief in predestination on the other, but, as the author rightly concludes, it is basically a lack of love. "What South Africa needs

and most surely lacks is love" is the author's final conclusion: "without love any solution put forward for ending South Africa's political, social, racial and international problems will be only a racial palliative and a group convenience." These are wise words, going to the root of the matter.

Now comes the problem: how do we get love for our neighbour whose color and history and whose outlook on life clash violently with our own?

JOHN H. WELLINGTON

University of Witwatersrand
Johannesburg, South Africa

Kenneth L. Landes. **Petroleum Geology.** John Wiley and Sons, Inc., New York, 1951. x and 660 pages, 222 illustrations. **$10.**

Within the last 35 years petroleum geology has become the largest and most vigorous branch of the profession. This volume discusses its three major branches of development. These are: (1) the geologic occurrence, by which is meant the origin and accumulation of the natural hydrocarbons; (2) the methods and techniques of searching for oil and gas deposits; and (3) the geographical distribution of these substances.

The volume begins with a chapter defining the profession of the petroleum geologist. It includes a brief history of the petroleum industry, present trends in petroleum geology and the general training of the petroleum geologist. Part I, devoted to techniques and methods, stresses exploration and exploitation. Under exploration such factors are treated as surface methods, geological surveying, subsurface geology, exploration geophysics, and subsurface maps and sections.

Part II treats the geologic occurrence of petroleum. This section of just over 200 pages gives a good summarization of the properties of hydrocarbons in the earth. The discussion of physical and chemical properties is followed by the origin and evolution of oil and gas. Theories relating to the migration of oil and gas and its accumulation in reservoir rocks and traps are well developed.

The geographer will find the last half of this volume, which treats present and future oil supplies, of greatest value. This portion is divided into three parts, the first of which deals with the distribution of oil and gas fields in the United States. Each of the oil producing states is treated individually. The reader needs only a minimum background in geology in order to understand the material presented. The discussion on each oil field includes such considerations as date of discovery, location, production trends, and geologic factors affecting development. After the United States each of the foreign oil producing countries are considered. The volume concludes with a chapter on future oil supplies.

One of the outstanding features of this volume is the large number of maps. The oil fields of each area are shown on a clearly drawn black and white map. There are few publications in the geographic or geologic fields which present detailed distribution patterns as effectively. There are several hundred footnotes and a short selected bibliography for more detailed study. The volume is especially well written giving a wealth of information and is of particular value to the geographer who is interested in the world distribution of petroleum from a geologic viewpoint.

E. WILLARD MILLER

Pennsylvania State College

Herman Schneider. **Everyday Weather and How It Works.** Whittlesey House, McGraw Hill Book Co., Inc., New York, 1951. 189 pages, illustrations, index. $2.75.

At long last we have a book about the weather written in an unusually concise, direct manner. Meaningful without being technical, it is specifically slanted at the junior high school pupil.

More than 200 simple but scientifically correct drawings illustrate this book and are not only eye catching, but help the young reader seize the full meaning of the text.

The outstanding feature of this book is the chapter on "Building Your Own Weather Station." Here the author gives complete and detailed instructions (each step beautifully illustrated) on how to construct actual working models of weather instruments. The materials needed are milk cartons, wire coat hangers, paper clips, paper cups, etc. Thus, for a few pennies any boy or girl can construct a weather station in a very short time. With practice they can undertake weather forecasts of their particular area with surprising accuracy.

This book is heartily recommended as a "must" not only for boys and girls, but also for the junior high school teacher of science who seeks new ideas on how to explain weather phenomena in simple enough terms so that all his pupils may understand them.

PETER GREENLEAF

Montauk Junior High School, Brooklyn, New York

David Greenhood. **Down to Earth: Mapping for Everybody.** Holiday House, New York, 1951. 262 pages, illustrations, appendix, index. $5.

Down to Earth is an ideal book on maps for the layman, the professional geographer, and the map hobbyist. Within its covers there is a variety of material ranging from the nature of maps, to directions for making one's own base maps, and to lists of mapping agencies. Altho much of the material is well known to geographers, the compact summation is of great value to this group, and the material constitutes a veritable storehouse of information for the layman. The book is interestingly and popularly written; the chapter on scale and distance is titled "This Little Means that Much"; the chapter on relief is called "Making Molehills out of Mountains."

The illustrations are well chosen and are ample in number. The author has the knack of explaining complicated problems in simple words and with the use of diagrams and charts. This makes the book suitable not only to the non-professional group, but fits it for reference work in the junior and senior high school classroom.

The 1951 edition has been amplified beyond the original (1944) work. New changes in hydrographic and aerial surveying have been incorporated, and new illustrations added. Of great value is a new section on mapping agencies—governmental, institutional, and private.

LOYAL DURAND, JR.

University of Tennessee

George Jorre. **The Soviet Union** (translated from the French by E. D. Laborde). Longmans, Green and Co., Inc., New York, 1950. xviii and 353 pages, 43 maps and diagrams, 24 photographs. $4.25.

N. T. Mirov. **Geography of Russia.** John Wiley & Sons, Inc., New York, 1951. xii and 362 pages, maps and diagrams. $6.50

This book is a translation of Jorre's book first published in French, and it includes also a considerable amount of new and revised material. The book consists of four main parts. Part I is a discussion of the physical setting of the U.S.S.R., following the classical outline of physical geography. Part II is a discussion of the development of the present distribution pattern of population and settlement in the Soviet Union.

Part III deals with the expansion of manufacturing and changes in agriculture in the country under the Soviet government. Part IV describes the "Main Natural Regions of the U.S.S.R."

Contrary to some opinions which have been expressed, it seems to this author that Professor Jorre cannot be called to task for uncritical use of Soviet source materials or for selection of data which overemphasize the material progress which has been made under the Soviet regime. Instead, the book contains a number of vivid, factual descriptions of the Russian countryside and cities and draws from them their clear implications of social, political, and economic conditions in the country. On page 101 is a clear, tho brief, discussion of the geographical implications of the ". . . iron grasp of the Communist party dictatorship . . . teachings . . . indoctrination . . ." which make the Soviet Union a political geographic unit—a distinctive major realm in the general geography of the world. No similarly simple and straightforward statement on that subject occurs in any other book in English on the geography of the U.S.S.R.

The book's main weakness, on the other hand, lies in the method of selecting, organizing, and presenting the material. Most of the book lacks a clear geographical organization. The reader encounters the first example of this in the first chapter, "Structure and Main Features of Relief." The student who reads this chapter will be confused concerning the broadest aspects of the geology of the country and unenlightened concerning the geologic details of really great resource significance. Furthermore, he will have learned nothing about the relief features of the country that is not revealed to anyone by the most cursory inspection of a simple, small-scale relief map. The material in parts II and III is developed historically by topics. There are no systematic geographical analyses of the topics. It is therefore difficult, if not impossible, for the reader of these chapters to come away with a clear idea of the geography of Soviet agriculture, manufacturing, or commerce.

The section entitled, "Natural Regions," is actually a short geography of the principal political-economic regions of the U.S.S.R. It is written in lively and interesting fashion—like most of the rest of the book; but it is also filled with many important geographical generalizations and is the best illustrated part of the book.

Geography of Russia is actually a partial geography of Russia. It opens with a systematic description of the general physical-geographic patterns of the whole U.S.S.R. There follows a short discussion of the migrations which produced the ethnic regional differences within the U.S.S.R. Part III, which comprises most of the book, is a systematic description of the climate, relief, virgin soils and vegetation, wild animal life, and a very brief listing of the ethnic groups which occupy each of twenty "geographic" (natural) regions. Some chapters also take brief note of the major economic mineral deposits in the region under consideration. The work is written always concisely and clearly to the point; Mirov's outline and organization of the material are always perfectly clear, even to the beginner. The book brings to the American reader a summary of the contents of several basic Russian physical geography texts which are not generally available to readers in this country.

Altho it deals in very broad generalizations, this book can nevertheless serve only a very specialized purpose because of its extremely limited approach to the geography of the U.S.S.R. It is hardly suitable for a general text. It is therefore lamentable that the book should appear at the same time as the English translation of one of Mirov's major sources, Prof. L. S. Berg's *Natural Regions of the U.S.S.R.* (Moscow, 1937). The content of the two volumes is very similar, altho Mirov's general physical and anthropological survey of the whole country is an innovation; and the translation of Berg's monumental work is generally somewhat more detailed, better illustrated, and is more expensive.

JOHN R. BORCHERT

University of Minnesota